

The role of cities in multi-level climate governance: local climate policies and the 1.5 °C target

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The past two decades have witnessed widespread scholarly interest in the role of cities in climate policy-making. This research has considerably improved our understanding of the local level in the global response to climate change. The present article synthesizes the literature on local climate policies with respect to the 1.5 °C target. While most studies have focused on pioneering cities and networks, we contend that the broader impacts of local climate actions and their relationship to regional, national, and international policy frameworks have not been studied in enough detail. Against this backdrop, we introduce the concept of upscaling and contend that local climate initiatives must go hand in hand with higher-level policies and be better integrated into the multi-level governance system.

the ground. In order to reach the 1.5 °C target, a massive expansion plus upscaling of local climate policies, and a deeper integration of city initiatives into the multi-level climate governance system, are urgently needed.

In the following, we take a look back at the emergence of local climate action. After that, we draw lessons from existing urban climate initiatives and highlight their opportunities and limitations. Building upon the concept of *upscaling*, we then point to the relationship of local climate policies with higher levels of government. Finally, we argue in favor of a synergetic division of labor across governmental levels to foster transformative shifts towards a low-carbon economy.

Addresses

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Looking back: the emergence of local climate policies

The idea of addressing transboundary environmental issues at the local level was first raised in the *Brundtland Report* published in 1987. One of the report's chapters focuses on the environmental challenges of urban areas and stresses the importance of local governments in attaining sustainable development [7]. The 1992 *Rio Earth Summit* and *Agenda 21* re-emphasized the role played by cities in the global response to environmental problems. Most recently, several new initiatives have been launched at the international level, first and foremost of which is the United Nations Habitat's *New Urban Agenda*, which provides a guiding framework for national governments to support sustainable urbanization. Furthermore, the *2030 Development Agenda* comprises the goal of building inclusive, safe, resilient, and sustainable cities (Sustainable Development Goal 11). These steps at the global level have been accompanied by measures at the national and regional levels, and by some pioneering cities to implement the concept of urban sustainability — both in a voluntary and strategic manner [8,9].

Introduction

The 2015 *Paris Agreement* highlights the important role of local governments in the global response to climate change [1]. Their engagement in climate policy-making started with a number of individual mitigation actions in the late 1980s [2]. Shortly thereafter, some pioneering cities began to form partnerships and networks to share knowledge and exchange good practices for dealing with climate-related issues in urban areas [3–6]. Although the activities of local governments will undoubtedly be fundamental for future mitigation and adaptation efforts, we need to be careful not to overestimate their potential on

Scholars have identified various reasons why some cities initiate environmental innovations, why certain cities take the lead, seek policy engagement with others, and kick-start policy diffusion [10–12]. Reviewing this broad literature, key drivers for the development of local climate policies include: (i) *High capacities combined with high problem pressure*: Cities like Curitiba, Durban, London, or New York, have taken remarkable steps to lower their GHG emissions and adapt to rising sea levels, landslides, floods, and droughts; (ii) *Local democracy*: Cities that allow for electoral choices for their citizens and political competition at the local level have promoted the

development of low-carbon policy innovations, despite the fact that locally elected bodies are at the same time also prone to capture by private interests; (iii) *Enabling policy framework*: Cities that possess considerable legal competencies and material resources, such as Swedish municipalities, have implemented policies that have led to tangible reductions of GHG emissions; (iv) *Socio-economic environment*: Cities with an environmentally-concerned civil society and a green industry have developed location-specific solutions to cope with climate change; (v) *Local leadership*: Mayors and other key players with enough political authority to encourage collective action have, in conjunction with a professional administration, pushed for effective urban climate strategies.

The difficulties of nation-states throughout the 2000s to adopt a far-reaching international climate agreement with effective means of implementation gave rise to several initiatives in pioneering cities which tried to fill the emerging regulatory vacuum. They were able to act more swiftly than national governments and some of them set ambitious GHG emission reduction goals within their jurisdictions before an international regulatory framework coming into force [13,14]. Greening cities appeared to be both a popular agenda for local policy-makers as well as a lucrative business for innovative green enterprises. Supported by new information and communication technologies, transnational city networks soon began to proliferate and stimulate the replication of successful solutions to address climate change in urban areas [6].

In addition to well-known initiatives, such as *ICLEI Local Governments for Sustainability*, the *Climate Alliance*, and *Energy Cities* that were all founded in the early 1990s, a number of other climate networks have emerged in recent years. The *C40 Cities Climate Leadership Group* (C40) has attracted great attention among scholars and policy-makers, and has received considerable institutional and financial support from different international institutions, including the *World Bank* [15]. In late 2016, the C40 network launched the *Deadline 2020* program which outlines a number of steps deemed necessary for its members to promote deep decarbonization pathways in metropolitan areas and to achieve the 1.5 °C target. The sheer size of densely populated megacities with more than 10 million inhabitants makes such initiatives attractive. Size and leverage allow for economies of scale for national and international climate investments and for reducing greenhouse gas (GHG) emissions: ‘To save the planet, build more skyscrapers’ [16].

Analyzing existing local climate policies: opportunities and limitations

Local governments have assumed crucial roles in climate policy-making and ‘the city now looms large on the international climate change agenda’ [9^{*}]. Numerous authors highlight the significance of cities in contributing

to the development of a low-carbon economy [17–19]. Albeit at a modest pace, they have, for instance, cut emissions from their own operations and everyday practices [20]. Cities have implemented new energy efficiency standards for both old and new buildings [21]. They have invested in alternative transportation systems and infrastructure, including mass transit, electric vehicles, and bicycle lanes, to promote the switch to carbon-neutral urban mobility [22]. And cities have introduced advanced solid waste management, thereby diminishing the release of GHGs and other harmful substances [23].

Given such advances on the ground, cities and their governments have gained broad international recognition and applause. Scholars emphasize that local governments are well positioned to produce environmental and other co-benefits from sustainable climate policies, such as economic savings, better air quality, or improved livability of communities [24,25]. They stress that cities can better agree on cooperative solutions because they are based on face-to-face communication, which is conducive to building trust and encourages reciprocity among stakeholders [26]. In addition, they point out that transnational city networks enhance policy learning which, under certain conditions, might overcome the constraints imposed by the lack of regional, national, and international regulatory environments [27].

Some scholars have conceptualized local climate policies as ‘governance experiments’ [28,29^{*}] that complement (and sometimes even supplant) regional and national programs, as well as the existing institutions clustered around the *United Nations Framework Convention on Climate Change* (UNFCCC). The experimentation concept brings different academic disciplines together and builds upon insights from the climate governance literature, the work on niches and grassroots innovations in socio-technical regimes, and the idea of urban living labs [29^{*},30]. In general terms, the concept of urban climate experimentation emphasizes the advantages of ‘bottom-up’ approaches for dealing with climate change, and corresponds with debates on polycentric climate governance [31,32].

However, scholars have also identified several constraints that cities face in undertaking effective local climate policies and making a substantial contribution to meet the 1.5 °C target. They contend that most of the world’s local governments have only few responsibilities in key sectors with relevance to climate change and lack the resources to carry out climate policies in their communities on a continuing basis [33,34]. In fact, due to the absence of an ambitious international climate treaty over many years, national governments were not bound to climate change mitigation measures and the financial support for local climate actions remained uncertain and scarce. Scholars also argue that local climate policies

and transnational city networks have led to rather modest GHG reductions which are often only a by-product of measures that were actually implemented to serve other needs [17,35]. Accordingly, critics stress that cities largely operate in the shadow of hierarchy and have only limited capacities to tackle the problem of climate change *independent* of other levels of government [36,37].

This implies that local decision-makers are dependent on regional, national, and international regulatory umbrellas that provide incentives and resources for cities to undertake large-scale climate action [38]. Particularly in developing countries, cities often face considerable budgetary constraints and lack the necessary capabilities to sustain and broaden their climate portfolios. In fact, the potential of local governments to effectively deal with the issue of climate change differs widely across regions, political systems, and administrative settings. Thus, the question arises whether, under which conditions, and how local governments can build enduring capacities to play their part in the global endeavor to achieve deep decarbonization.

Looking forward: upscaling of local climate action

Although a number of leading cities, such as Copenhagen, Portland, Sydney, Yokohama, and others, are taking effective climate actions, the majority of small to medium-sized cities have not yet developed appropriate mitigation and adaptation strategies. This is bad news as limiting the temperature increase to 1.5 °C will essentially require proactive policies to be pursued and carried out by all sub-national governments. Although the power and the scope of action that cities possess vary considerably across countries, there seems to be tension between their self-governing capacities on the one hand, and decisions to allocate GHG emission reduction targets among local authorities on the other.

National goals to curb GHG emissions are not systematically broken down to the local level, where cities with different capacities and climate conditions need to assume different responsibilities. Such mechanisms have been developed and tested in the *European Union* (EU) with respect to the allocation of emission reductions and differentiated targets for EU member states. Yet, these effort-sharing agreements have so far never been considered for cities. Such a collaborative approach would be in line with the *New Urban Agenda*, which stipulates nation-states to define national urban strategies.

To bridge this gap, we have identified a promising research strand focusing on the expansion and upscaling of local climate policies [39[•],40,41]. We distinguish between three forms of upscaling [42[•]]. First, current research focuses on *horizontal upscaling* between leading cities, including literature on good practice transfer, replication, and policy mobility [43,44]. This form of

upscaling is based on bilateral city to city as well as networking arrangements among cities. In this realm, studies deal primarily with transnational networks, while *national* partnerships, associations, and networks between cities remain under-researched, although they have always played an important role in practice.

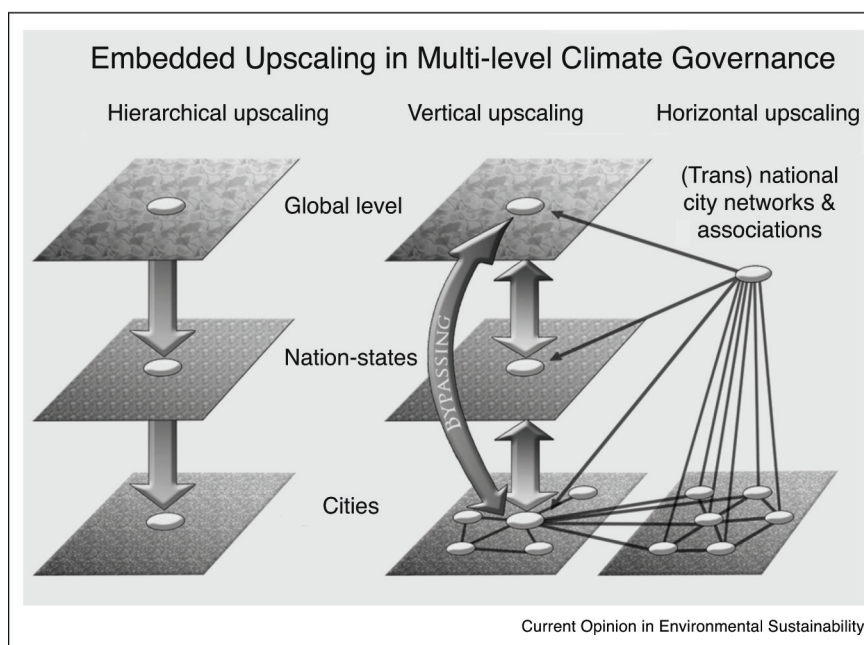
Second, *vertical upscaling* between ‘leaders’ and ‘followers’ requires actions at regional and national levels. Replication of local experiments is not a cure-all solution for reaching the 1.5 °C target. In most cities, local climate policies depend on national and regional strategies, in particular the establishment of new institutions, such as regional energy agencies, and national funding programs like Germany’s *Kommunalrichtlinie*. These programs broaden climate initiatives and stimulate actions in smaller cities and towns. Vertical upscaling may also lead to differentiated ambition levels for varying types of municipalities [45].

Third, *hierarchical upscaling* between ‘leaders’ and ‘laggards’ entails additional action at regional and national levels. In contrast to the two latter forms of upscaling, hierarchical upscaling is based on legally binding rules, such as the EU’s mandatory efficiency standards for buildings. Although this type of upscaling has been successfully implemented in the EU, it will be much more difficult to enforce universal standards at the international level, albeit the New Urban Agenda might be seen as a first step in this direction. In any case, national and regional minimum standards for ‘laggards’ seem to be crucial and indispensable in order to attain a substantial decrease of GHG emissions in urban areas [39[•],40].

The combination of horizontal, vertical, and hierarchical climate governance in multi-level arrangements leads to a new governing mode that we call *embedded upscaling* (see Figure 1). Embedded upscaling takes the dynamics between ‘leaders’, ‘followers’, and ‘laggards’ into account and emerges when the three forms of upscaling are combined in a particular governance setting. ‘Leaders’ like Copenhagen need to maintain their guiding role, ‘followers’ have to develop capacities and catch up, while ‘laggards’ must comply with minimum standards set by regional and national governments [40]. Although the concept of embedded upscaling has so far only been applied in the context of the EU, we contend that it could serve as an important analytical tool for studying the amplification and mainstreaming of individual local climate policies on a global scale, too.

This means that local climate actions become increasingly integrated in regional, national, and international policy frameworks. The multi-level governance system enables transnational institutions and networks to *bypass* recalcitrant national governments [45,46], but it also allows regional and national governments to stimulate and even enforce climate action at the local level.

Figure 1



Embedded upscaling in multi-level climate governance.
Source: Based on Kern 2014.

Furthermore, the expansion of local climate policies may even have a catalytic effect on higher levels of government. The various climate activities undertaken in cities could hence potentially increase the confidence of regional and national governments to set more ambitious GHG emission reduction goals and pursue sustainable low-carbon strategies. These political dynamics between cities and higher levels of government are of crucial importance for the global response to climate change and need to be studied in more detail [47*].

Conclusion: towards a division of labor

Our review of local climate policies to achieve the 1.5 °C target points to important avenues for research and practice. A first area touched upon is how the various local climate policies and their massive expansion over time could push the international climate negotiations forward [48]. Further inquiries are warranted to examine the concrete pathways through which the joint activities of cities can contribute to ratcheting up the global ambition to address climate change [28,36].

A second and related topic is how public authorities at different governmental levels operate as mediators, enablers, and coordinators to support the practice of upscaling local climate policies. This is in line with current debates on the concepts of orchestration and policy diffusion in global climate governance [49]. Empirical studies are needed to systematically assess how international institutions and other bodies orchestrate

or collaborate with local governments worldwide to initiate and promote deep decarbonization in urban areas [50].

This gives impetus to the notion of a synergetic *division of labor* across governmental levels which is also supported by international climate financiers [47*]. To keep global warming to the 1.5 °C target, coordinated efforts at all levels of government are required, each effectively utilizing its comparative advantage. From a practical perspective, while the Paris Agreement will guide national efforts to limit GHG emissions, a timely upscaling of local climate policies is of utmost importance to close the existing ambition gaps in the global response to climate change.

Conflict of interest

We have no conflict of interest to declare.

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